

New combinations and typifications in *Aglaomorpha* (Polypodiaceae)

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ABSTRACT. In preparation for a new checklist of Singaporean plants, the *Flora of Singapore* project, and the *Ferns of Thailand, Laos and Cambodia* website, new combinations in *Aglaomorpha* Schott are made to accommodate species formerly placed in *Drynaria* (Bory) J.Sm. and *Christiopteris* Copel. Ten names are lectotypified, seven of which are second step lectotypifications, and one name is neotypified.

Keywords. *Christiopteris*, *Drynaria*

Introduction

A close relationship between *Aglaomorpha* Schott and *Drynaria* (Bory) J.Sm. has long been suspected and led to the establishment of the tribe Drynarieae Subh.Chandra to accommodate these two genera (see Hennipman et al., 1990). On the other hand, the relationships of *Christiopteris* Copel. were presumed to be with other genera of Polypodiaceae (Hennipman et al., 1990) or were said to be uncertain (Hennipman et al., 1998).

Recent phylogenetic research on these genera has shown that both *Aglaomorpha* and *Christiopteris* are nested within a paraphyletic *Drynaria* (Janssen & Schneider, 2005; Schneider et al., 2008) which led Christenhusz & Schneider (2012) to propose the conservation of *Drynaria* against *Aglaomorpha*. After two rounds of voting no consensus could be reached as to whether to conserve or reject this proposal (Applequist, 2014). This means that the normal rules of priority should apply and that the name *Aglaomorpha* should be adopted for the genus *sensu lato*. Despite this, Christenhusz (2015) made combinations in *Drynaria* for all species in the clade which did not already have names in the genus.

The Angiosperm Phylogeny Group has been deliberating on relationships and the classification of flowering plants since 1998 (APG, 1998; APG II, 2003; APG III, 2009; APG IV, 2016) but only recently has there been an equivalent for lycophytes and ferns, the Pteridophyte Phylogeny Group (PPG I, 2016). This has set the standard for family delimitation in lycophytes and ferns based on a large synthesis of relevant

literature and community consensus, the latter particularly when better data is pending. In this work *Drynaria* and *Christiopteris* are included in synonymy of *Aglaomorpha*. As names are needed for a number of existing and upcoming projects, such as a new checklist of Singaporean plants, the *Flora of Singapore* project, and the *Ferns of Thailand, Laos and Cambodia* website (Lindsay & Middleton, 2012 onwards), we hereby make the necessary new combinations, including for those species not strictly necessary for these projects.

The expanded *Aglaomorpha* has about 50 species (PPG I, 2016) in tropical Africa, the islands of the Indian Ocean, tropical Asia and tropical Australia to Fiji.

New Combinations

Aglaomorpha baronii (Diels) Hovenkamp & S.Linds., **comb. nov.** – *Drynaria baronii* Diels in Engler & Prantl, Nat. Pflanzenfam. 1(4): 330, f. 171C (1899). – *Polypodium baronii* Christ, Nuovo Giorn. Bot. Ital., n.s., 4(1): 100, pl. 2 (1897), nom. illeg., non Baker (1887). – TYPE: China, Shensi Septentrionali [= Northern Shaanxi], Dalle falde fino circa la metà del Monte Zu-lu, 10–12 Aug. 1894, *Giraldi s.n.* (lectotype FI [FI017966], first step designated by Roos (1986), second step designated here; islectotype K [K000959789]).

Distribution. China (Gansu, Qinghai, Shaanxi, Shanxi, Sichuan, E Xizang [Tibet], NW Yunnan).

Aglaomorpha bonii (Christ) Hovenkamp & S.Linds., **comb. nov.** – *Drynaria bonii* Christ, Notul. Syst. (Paris) 1(6): 186 (1910). – TYPE: Vietnam, Tonkin [Ha Nam Province], 8 Jul. 1886, in montibus Ban Phêt, *Bon 3204* (lectotype P [P00266163], first step designated by Roos (1986), second step designated here; islectotype P [P00274620]).

Distribution. India, China, Vietnam, Laos, Cambodia, Thailand, Peninsular Malaysia.

Aglaomorpha delavayi (Christ) Hovenkamp & S.Linds., **comb. nov.** – *Drynaria delavayi* Christ, Bull. Soc. Bot. France: Mem. 1: 22 (1905). – TYPE: China, Yunnan, Mt. de Kouang-yun-chan, *Delavay 1166* (lectotype P [P00266136], first step designated by Roos (1986), second step designated here; islectotypes K [K000959792], P [P00274616, P00274615]).

Distribution. Bhutan, Myanmar, China.

Aglaomorpha descensa (Copel.) Hovenkamp & S.Linds., **comb. nov.** – *Drynaria descensa* Copel., Philipp. J. Sci., C. 3: 36 (1908). – TYPE: Philippines, Luzon,

Nueva Ecija, *Copeland 2061* [also labelled *Pteridophyta Philippinensia Exsiccatae* 42] (lectotype MICH [MICH1190384], first step designated by Roos (1986), second step designated here; isoelectotypes B (n.v.), BM (n.v.), G (n.v.), K [K000572169], L [L.0537125], MU [MU000020234], NSW (n.v.), S [S09-41634; S-P-4751], UC [UC350958]).

Distribution. Philippines (Luzon).

Aglaomorpha fortunei (Kunze ex Mett.) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium fortunei* Kunze ex Mett., Abh. Senckenberg. Naturf. Ges. 2(1): 121, t. 3, f. 42–45 (1856). – *Drynaria fortunei* (Kunze ex Mett.) J.Sm. in Seemann, Bot. Voy. Herald: 425 (1857), nom. illeg., non T.Moore (1855). – *Drynaria roosii* Nakaike, New Fl. Jap. Pterid.: 841 (1992). – TYPE: China, *Fortune A 78* (lectotype K [K000959791], first step designated by Roos (1986), second step designated here; isoelectotype GOET [GOET007408]).

Distribution. China, Taiwan, Laos, Vietnam (according to Roos, 1986).

Aglaomorpha involuta (Alderw.) Hovenkamp & S.Linds., **comb. nov.** – *Drynaria involuta* Alderw., Bull. Dept. Agric. Indes Neerl. 21: 8, t. 4 (1908). – TYPE: Borneo, *Teijsmann 8577* (lectotype L [L.3532943], designated by Roos (1986)).

Distribution. Borneo.

Aglaomorpha laurentii (Christ ex De Wild. & Durand) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium propinquum* var. *laurentii* Christ ex De Wild. & Durand, Ann. Mus. Congo Belge. Bot., ser. 2, 1: 70 (1899). – *Drynaria laurentii* (Christ ex De Wild. & Durand) Hieron., Veg. Erde 2: 57, f. 54. (1908). – TYPE: D.R.Congo (Kinshasa), lower Congo, Inkisi, *Laurent s.n.* (lectotype BR [BR0000008053800], designated by Roos (1986); isoelectotype P [P00266236]).

Distribution. Widespread in tropical Africa (Gabon, Uganda, Kenya, Tanzania, Principe Isl., Sao Tomé, Bioko Isl. (Fernando Po), Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Nigeria, Cameroon, Central African Republic, Equatorial Guinea, D.R.Congo, Ethiopia, Rwanda, Congo, Angola).

Aglaomorpha mollis (Bedd.) Hovenkamp & S.Linds., **comb. nov.** – *Drynaria mollis* Bedd., Ferns Brit. India 1: pl. 216 (1866). – TYPE: India, Nynee Tal, *Dyas 6* (lectotype K [K000959785], designated by Roos (1986)).

Distribution. Nepal, Bhutan, N India, China (Xizang [Tibet], NW Yunnan).

Aglaomorpha parishii (Bedd.) Hovenkamp & S.Linds., **comb. nov.** – *Pleopeltis parishii* Bedd., Ferns Brit. India 1: pl. 125 (1866). – *Drynaria parishii* (Bedd.) Bedd., Suppl. Ferns S. Ind.: 24 (1876). – TYPE: Myanmar, ‘Moulmein’, *Parish s.n.* (lectotype K [K000959778], designated here).

Distribution. Myanmar, Vietnam, Laos, Thailand.

Aglaomorpha pleuridioides (Mett.) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium pleuridioides* Mett. in Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 229 (1866). – *Drynaria pleuridioides* (Mett.) Diels in Engler & Prantl, Nat. Pflanzenfam. 1(4): 330 (1899). – TYPE: Java, *Blume s.n.* (lectotype L [L.3532882], designated here).

Distribution. Indonesia (Sumatra, Java, Lesser Sunda Islands, Sulawesi, Moluccas).

Aglaomorpha propinqua (Wall. ex Mett.) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium propinquum* Wall. ex Mett., Abh. Senckenberg. Naturf. Ges. 2(1): 120, t. 3, f. 50 (1856). – *Drynaria propinqua* (Wall. ex Mett.) J.Sm. ex Bedd., Ferns Brit. India 1: 160, pl. 160 (1866). – TYPE: Nepal, 1821, *Wallich 293* (lectotype B [B200060689], first step designated by Roos (1986), second step designated here; isoelectotypes B [B200060690, B200060691, B200060692], BR [BR0000005794416], K-W [K001109730 (left specimen only), K001109731, K000959780], L [L.3532834, L.3532835], NY [00127764], US [US00065584], W [W0061364]).

Note. There are several other specimens of *Wallich 293* listed in the literature and specimen databases but as this is a mixed collection we have only listed those we have verified as isoelectotypes.

Distribution. India, S China, Myanmar, Vietnam, Laos, Thailand.

Aglaomorpha quercifolia (L.) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium quercifolium* L., Sp. Pl. 2: 1087 (1753). – *Drynaria quercifolia* (L.) J.Sm., J. Bot. (Hooker) 3: 398 (1841). – TYPE: “Habitat in India”, Herb. Hermann 1: 39, No. 382 (lectotype BM [BM000621366], designated by Sledge, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 144 (1960); not *Herb. Linn (LINN, Microfche no. 1251.12)* as given by Roos (1986) and Hovenkamp (2013)).

Distribution. Sri Lanka and India to S China and throughout SE Asia and Malesia to Fiji and tropical Australia.

Aglaomorpha rigidula (Sw.) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium rigidulum* Sw., J. Bot. (Schrader) 1800(2): 26 (1801). – *Goniophlebium rigidulum* (Sw.) T.Moore, Index Fil.: 396 (1862). – *Drynaria rigidula* (Sw.) Bedd., Ferns Brit. India 3: pl. 314 (1869). – TYPE: Java, *Thunberg s.n.* (lectotype UPS [Cat. No. 24565], designated here).

Note. Roos (1986) chose a *Thunberg* specimen from Java at S to be the lectotype (and the same specimen was cited in *Flora Malesiana* (Hovenkamp & Roos, 1998)) but we have been unable to trace this specimen.

Distribution. SE Asia to the Pacific islands and tropical Australia.

Aglaomorpha sagitta (Christ) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium sagittum* Christ, Bull. Herb. Boissier 6: 199 (1898) [as ‘*sagitta*’]. – *Christiopteris sagitta* (Christ) Copel. in Perkins, Fragm. Fl. Philipp.: 188 (1905). – *Selliguea sagitta* (Christ) Fraser-Jenk., Taxon. Revis. Indian Subcontinental Pteridophytes: 45 (2008). – *Drynaria sagitta* (Christ) Christenh., Phytotaxa 230(3): 299 (2015) [as ‘*sagittata*’]. – TYPE: Philippines, Luzon, La Trinidad. *Loher s.n.* (lectotype P [P01545178], designated by Hennipman & Hetterscheid (1984)).

Distribution. Philippines (Luzon, Mindanao).

Aglaomorpha sparsisora (Desv.) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium sparsisorum* Desv., Ges. Naturf. Freunde Berlin Mag. Neuesten Entdeck. Gesamnten Naturk. 5: 315 (1811). – *Drynaria sparsisora* (Desv.) T.Moore, Index Fil.: 348 (1862). – TYPE: Papua New Guinea, Central Province, Cloudy Bay, 16 Feb. 2007, *Johns 11056* (neotype SING [SING0195508] designated here; isoneotypes BRI (n.v.), BRIT (n.v.), K (n.v.), L (n.v.), LAE (n.v.), UPNG (n.v.)).

Note. In the protologue Desvaux (1811) gave the distribution of the species as ‘Habitat in America?’, clearly expressing doubt as to where the species was from. The species is only known in tropical Asia and Australasia, not in the Americas. We have been unable to trace any original material.

Distribution. Thailand, Cambodia, Malesia and tropical Australia.

Aglaomorpha tricuspis (Hook.) Hovenkamp & S.Linds., **comb. nov.** – *Acrostichum tricuspe* Hook., Sp. Fil. 5: 272, t. 304 (1864). – *Gymnopteris tricuspis* (Hook.) Bedd., Ferns Brit. India 1: pl. 53 (1865). – *Cheiropleuria tricuspe* (Hook.) J.Sm., Hist. Fil.: 139 (1875) [as “*bicuspe*”]. – *Leptochilus tricuspis* (Hook.) C.Chr., Index Filic., fasc. 7: 388 (1906). – *Christiopteris tricuspis* (Hook.) Christ, J. Bot. (Morot), ser. 2, 1: 273

(1908) [= J. Bot. (Morot) 21: 273 (1908)]. – *Selliguea tricuspis* (Hook.) Fraser-Jenk., Taxon. Revis. Indian Subcontinental Pteridophytes: 45 (2008). – *Drynaria tricuspis* (Hook.) Christenh., Phytotaxa 230(3): 299 (2015). – TYPE: India, Sikkim, *Atkinson s.n.* (lectotype K [K000959645], first step designated by Hennipman & Hetterscheid (1984), second step designated here; isoelectotype K [K000959644]).

Distribution. India, Thailand, Peninsular Malaysia, Vietnam, China (Hainan).

Aglaomorpha volkensii (Hieron.) Hovenkamp & S.Linds., **comb. nov.** – *Drynaria volkensii* Hieron., [Veg. Erde 2: 57 (1908), nom. nud.] Bot. Jahrb. Syst. 46: 393 (1911). – TYPE: Tanzania, Moshi District, Kilimanjaro, Marangu, *Volkens 735* (lectotype B [B200061011], designated by Tardieu-Blot (1964); isoelectotypes E [E00429072], K [K000435913]).

Distribution. Widespread in tropical Africa from Cameroon, Bioko, Congo (Kinshasa), Rwanda, Burundi, Sudan, Ethiopia, Kenya, Somalia, Uganda, Zambia, Malawi, Tanzania, Mozambique.

Aglaomorpha willdenowii (Bory) Hovenkamp & S.Linds., **comb. nov.** – *Polypodium willdenowii* Bory, Ann. Sci. Nat. (Paris) 5: 468, pl. 13 (1825). – *Drynaria willdenowii* (Bory) T.Moore, Index Fil.: lxxix (1857). – TYPE: Mauritius, Mt du Pouce, *Bory St. Vincent s.n.* (lectotype P [P00266223], designated by Roos (1986)).

Distribution. Madagascar, Mascarenes (Mauritius, ?Reunion), Comores.

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